National Health Policy Forum

Projecting Future Clinician Supply and Demand: Advances and Challenges

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Health Workforce Projections

NOT predicting the future…

Goal: Informing stakeholders and policy makers about the workforce implications of alternative futures and policies

Projections are not predictions!

Overview

- HRSA/BHPR historically produced projections/models
- ACA established the National Center for Health Workforce Analysis
- A top priority for National Center:

  Projections ⟹ Supply ⟹ Access to care

- Work underway: "Clinical Specialty Models"
  - *Major improvements in structure and inputs*
- Yet basic conceptual challenges remain
- Going forward: How frame? How use findings?

Basic Challenges in Projecting

- Availability of research and data to inform modeling
- Projecting the future based on the past
- Uncertainty of many possible changes in delivery and financing
- Extent of supply and demand interaction
- The unit of analysis is critical; (national) averages can mask enormous variations within the units being studied (communities); how to present?
- Cost/resources needed for systematic assessment of each occupation/specialty (one size does not fit all)
- Identifying policy levers to influence future supply and demand

A Problem of Relying on Historical Patterns: An Example
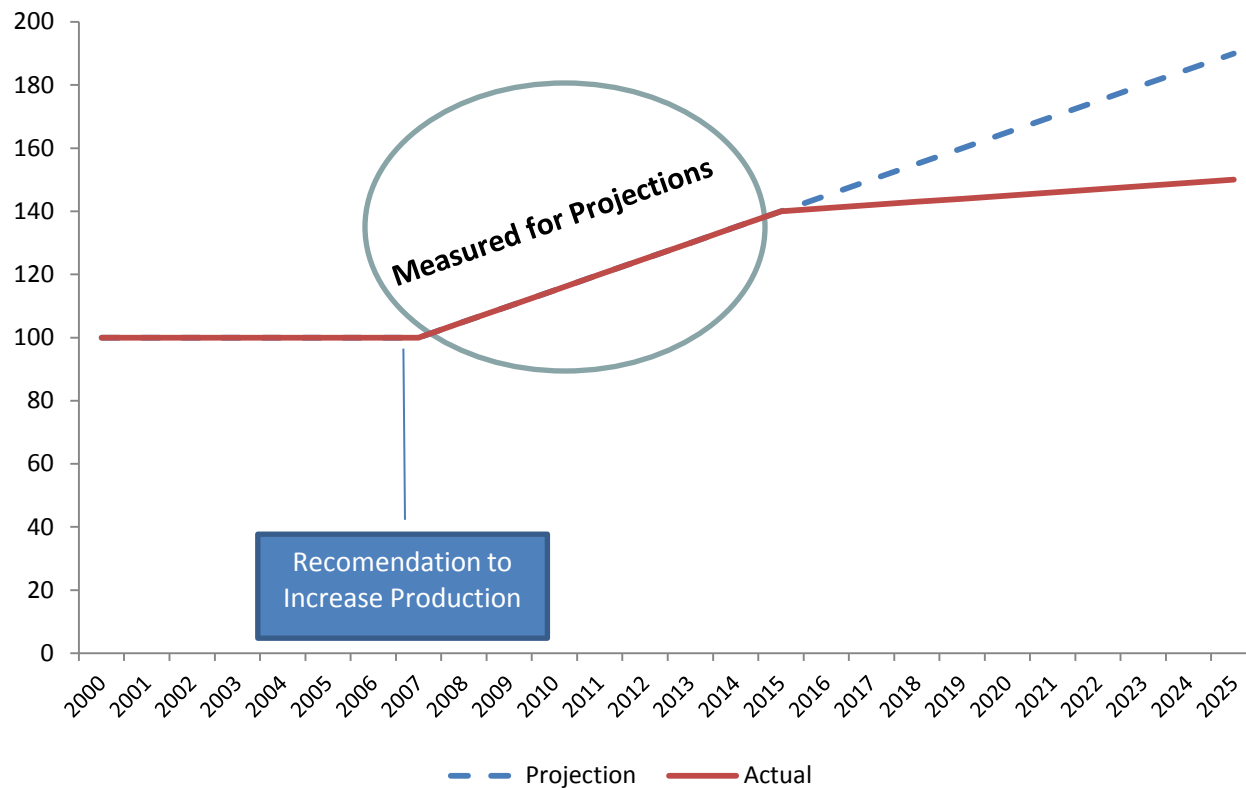
The Uncertain Future: Consider Primary Care

What will the staffing of the PCMH look like*?

A. If no delegation: 1 physician for 983 patients = 315,000 PC physicians; *Then significant shortage!*

B. If significant delegation: 1 physician for 1,947 pts = 159,000 PC physicians; *Then significant surplus!*

(But even with a national surplus there can be local shortages)

* *"Estimating a Reasonable Patient Panel Size for Primary Care Physicians with Team Based Delegation"*, Altschuler, Margolis, Bodenheimer and Grumbach; Annals of Family Medicine, Sept/Oct 2012

NCHWA Priorities for Projections

- **Improved Inputs** – assess new sources of data and populate with best available base year data and model parameters

- **Integrated Projections Systems** – bundling related professions in a single projections system, allowing simulation of team-based care and substitution

- **Enhanced Scenario Modeling** – models must be nimble and flexible, capable of projecting the implications of numerous trends and policies on the future health workforce

- **Improved Interfaces** – models must be user-friendly and transparent, available for use by outside researchers and policy analysts

NCHWA Activities for <u>Future</u> Enhancements to Projections

- <u>Microsimulation</u> – in 2013, NCHWA is building nurse supply and demand forecasting models simulating the employment and care-seeking behavior of individual nurses and patients
  - Facilitates scenario modeling and local-area forecasting
  - Improves forecast accuracy by incorporating more predictive variables (e.g., disease risk in the local population)
  - Consider additional non-physician clinicians
- <u>Tracking Key Indicators</u> – identify key indicators that signal which supply/demand trajectories and scenarios are most accurate
- <u>Regular Schedule of Updates</u> – published a schedule of projection releases, by profession, to inform stakeholders

The "Projections Complexity" Continuum on the Supply Side

Simplest: Extrapolate past growth of overall workforce

Simple: Stock and flow model counting new entrants and exits

Complex: Stock and flow model counting new entrants and exits by numerous dimensions (e.g., specialty, sex, region) and incorporating additional supply equations for migration and specialty change.

Most Complex: Microsimulation model tracks individual health workers by as many dimensions as is useful, simulates employment decisions of individuals.

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All of these project forward past conditions unless directly specified as a scenario

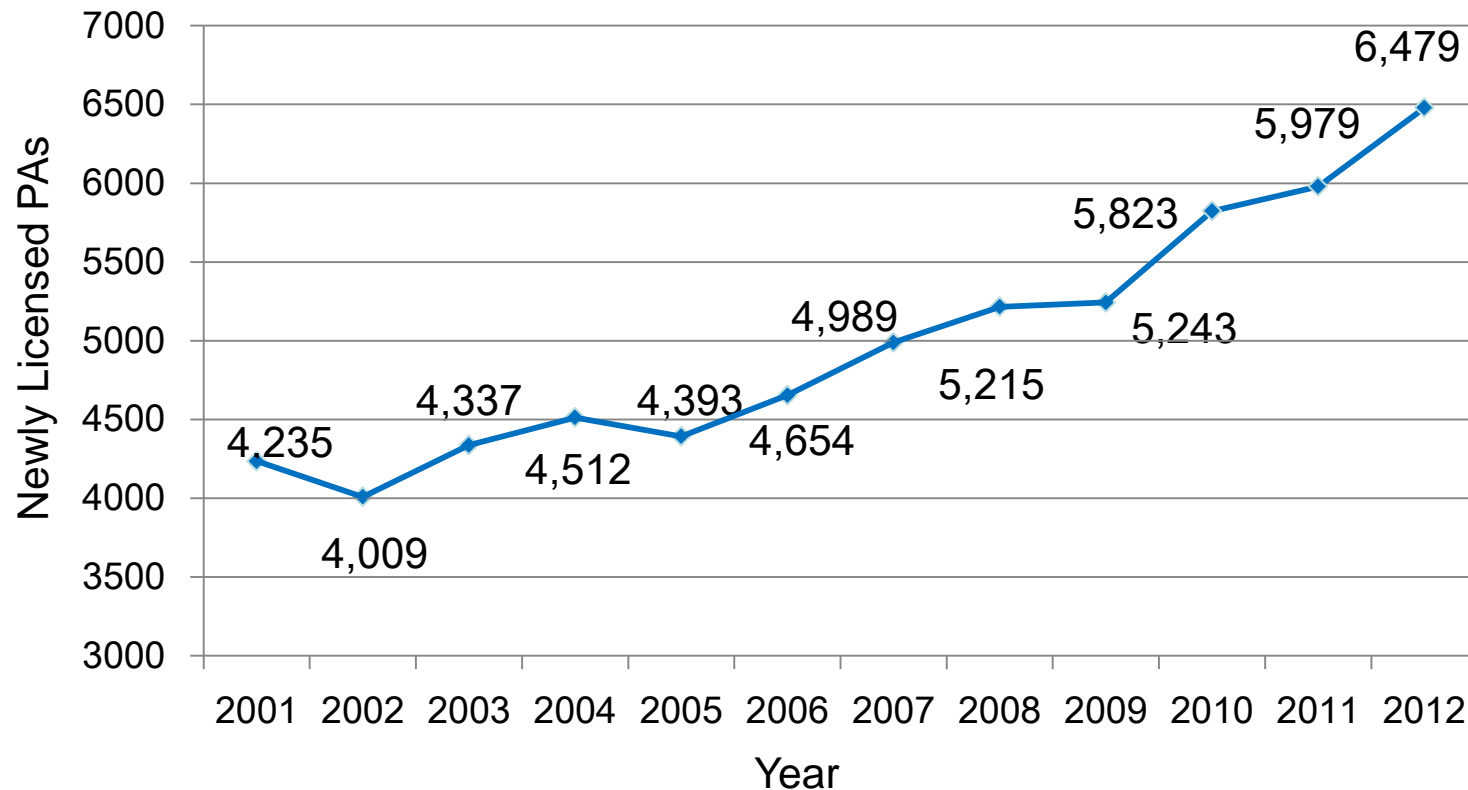# NP Growth

Growth in NP[1] Graduates, 2001-2011
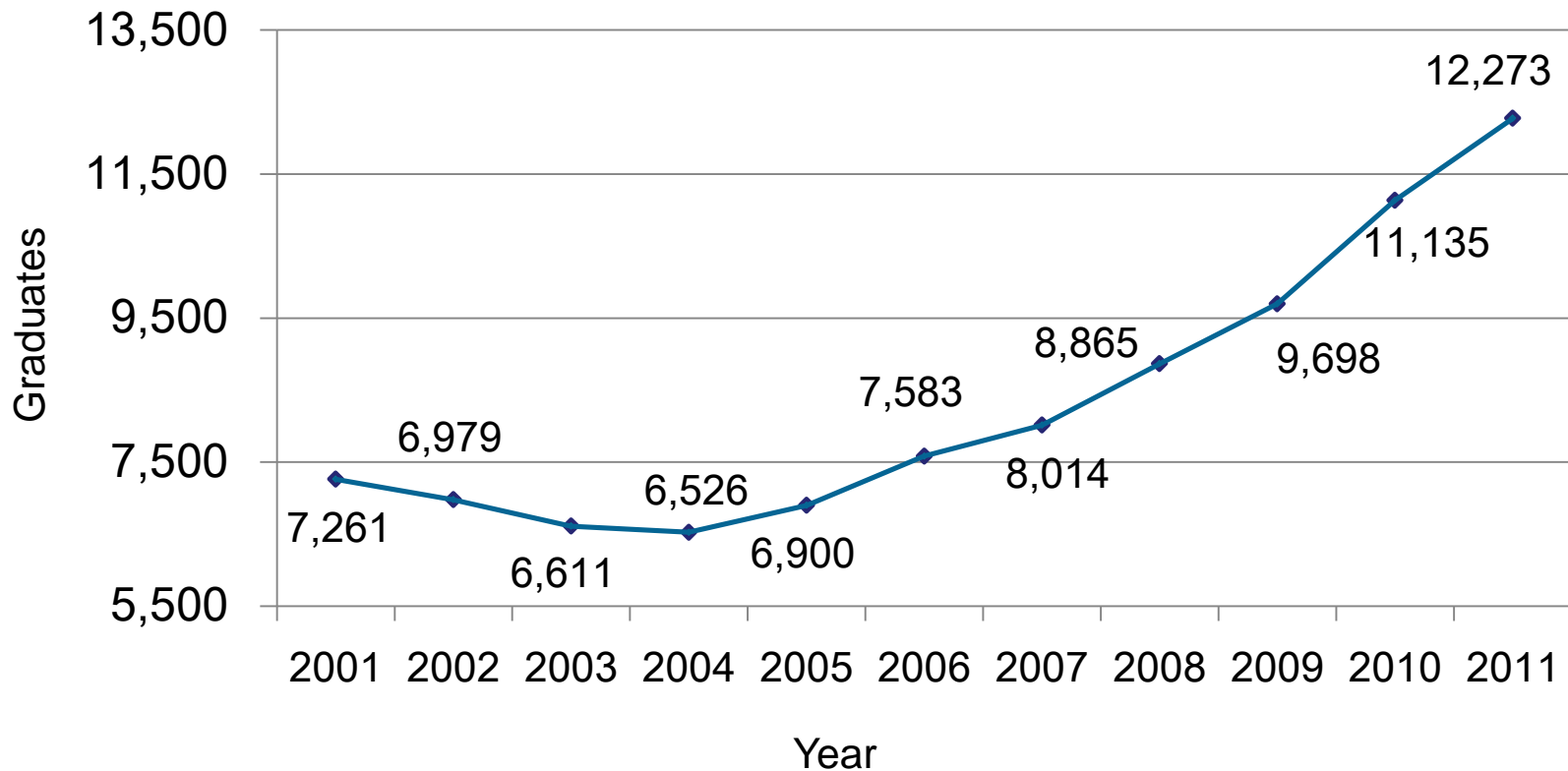
Source: American Association of Colleges of Nursing Annual Surveys
[1]Counts include master's and post-master's NP and NP/CNS graduates, and Baccalaureate-to-DNP graduates.

PA Growth

## Newly Certified PAs, 2001 - 2012

Our New Models:
A Major Step Forward

Key Improvements of Current Work

- **Addition of NPCs on Supply-Side**
  - New ability to make shortage/surplus projections simultaneously for physicians, NPs, CNMs, CRNAs, and PAs
- **Improved Inputs**
  - Base year supply/demand informed by the 2012 National Sample Survey of NPs, the American Community Survey, and data from the AAPA and NCCPA on PAs
  - Retirement probabilities re-estimated using data from the American Community Survey
  - Parameters informed by research about insurance effects on care-seeking and the relationship of income to health spending
- **Improved Interfaces**
 - User guides integrated into interfaces, new supply/demand integrator constructed

The Clinician Specialty Supply Model
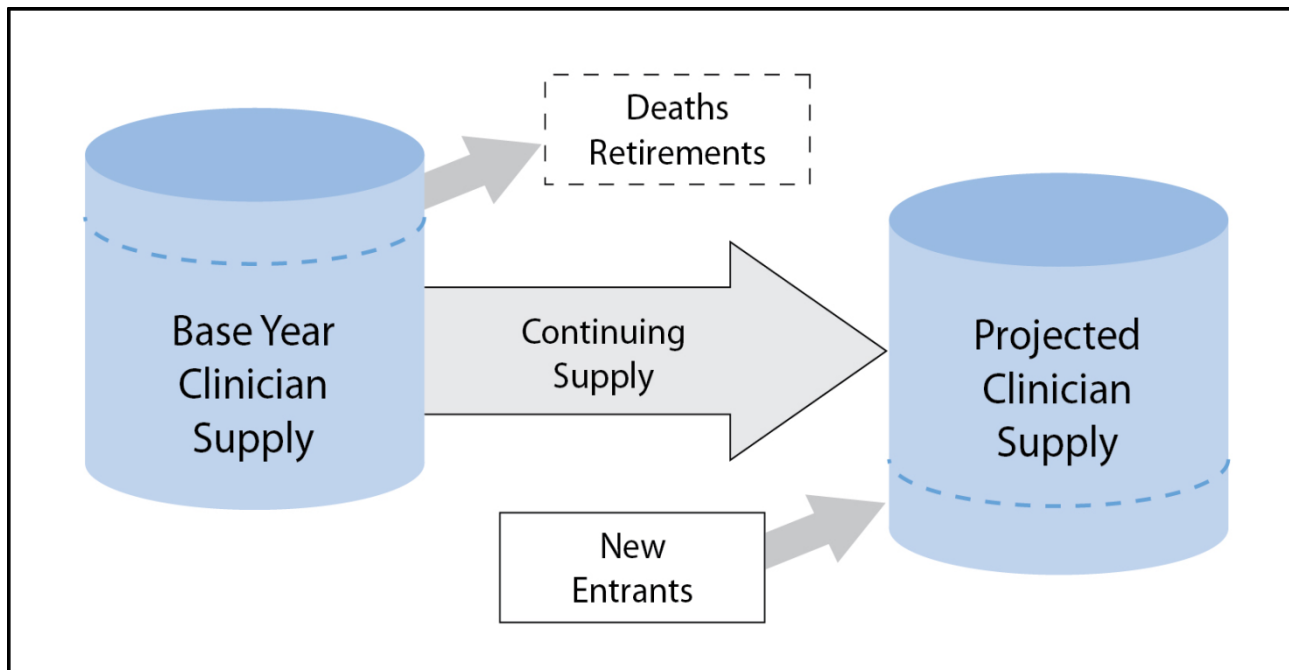
Supply Projections Methodology

- **Macro-simulation** approach tracks the number of active clinicians in categories defined by age, sex, and specialty

- **"Stock and flow"** or inventory modeling is used to simulate the entry of new clinicians, the exit of retiring clinicians, and the changing age and workforce participation patterns of the base clinician supply

- **Key inputs** include projections of new entrants, retirement rates, and rates of FTE workforce participation

- Physician portion of the model is more complex, tracking new physicians through GME training and ultimate selection of specialty, country of graduation, type of physician (MD vs. DO), and shifts in specialty practice over a career

The Clinician Specialty Demand Model
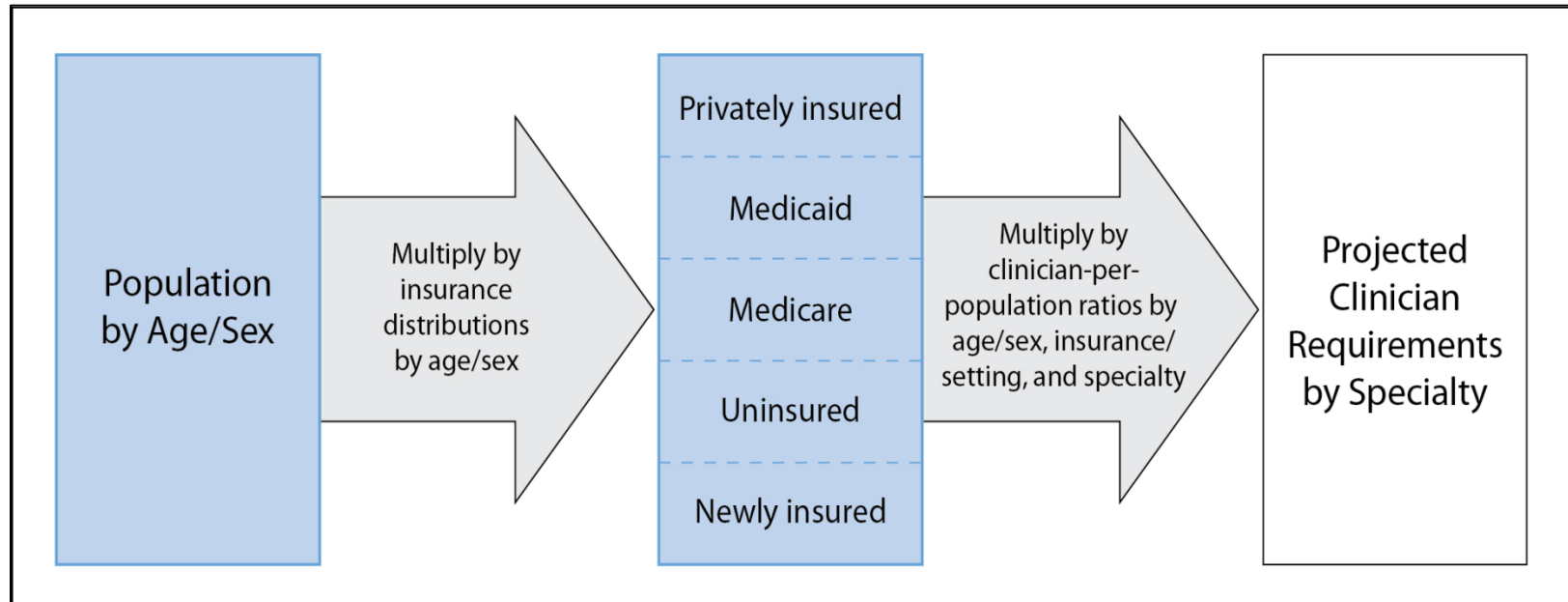
Demand Projections Methodology

- **Macro-simulation** approach is utilization-based, drawing from data linking population characteristics and insurance status to demand for services in a specialty

- A second step links demand for specialty services to the number of providers required to perform them **("staffing model")**

- **Changes in population** size, age, and insurance coverage drive changes in the demand for services

- **Changes in the staffing model** can drive additional changes in demand for providers

Some Key Factors Driving Findings

- U.S. Population Change – 2012 Census Projections
  - Higher growth in older age categories, lower growth in younger
  - Overall population growth projection adjusted downward
- Assumptions about the use of NPCs (maintain current ratio or increase delegation) impacts the overall assessment from shortage to surplus (In base year, estimate 780,000 patient care physicians and 260,500 PAs, NPs, midwives and nurse anesthetists)
- Timing of Supply and Demand Measurement (Historical Patterns)
  - Recent production increases
  - Recent utilization patterns by specialty (vs. desired use patterns)

Observations

- Even with far improved inputs and algorithms, great challenges of projecting future supply and demand

- The baseline does not take into account the changing delivery system; a separate process may be necessary for scenario development

- The degree of integration and acceptance of NPCs will have major impact on adequacy of workforce supply

- Other uncertainties: changing health care delivery system, retirement patterns, disease patterns

- National total supply and demand numbers mask significant variations across specialties and communities

- Need for tracking key indicators to determine which scenarios most accurate

- Need to better identify possible policy levers